

resins which in turn is over-laid with a magnetic layer containing an iron based magnetic powder. The magnetic layer has a glass transition temperature of at least 65 degrees centigrade and the non-magnetic layer is an electron beam cured coating that is formed by coating the non-magnetic base with a non-magnetic coating mix containing electron beam curable resins.

Claim 1 is directed to a magnetic recording medium that includes a lower non-magnetic layer and an upper magnetic layer. Claim 1 recites that the non-magnetic layer contains at least a carbon black and a radiation curing binder resin on a non-magnetic support. Claim 1 also recites that the upper magnetic layer has a thickness of 0.30 microns or less of the lower non-magnetic layer. Further, claim 1 recites that the upper magnetic layer contains at least a ferromagnetic powder, a binder resin, and an abrasive having a Mohs hardness of 6 or higher and a smaller average particle size than the thickness of the upper magnetic layer.

It is respectfully submitted that claim 1 does not incorporate any process limitations. Thus, it is respectfully submitted that the rejection is improper as applied to claim 1 at least for this reason. Therefore, it is respectfully submitted that claim 1 is allowable.

Claim 8 is directed to a magnetic recording medium that includes a lower non-magnetic layer and an upper magnetic layer. The lower non-magnetic layer contains at least a carbon black and a radiation curing binder resin on a non-magnetic support. The upper magnetic layer has a thickness of 0.30 microns or less on the lower non-magnetic layer. The upper magnetic layer contains at least a ferromagnetic powder, a binder resin and an abrasive having a Mohs hardness of 6 or higher and a smaller average particle size than a thickness of the upper magnetic layer. Claim 8 recites that the magnetic recording medium is produced by a process that includes the steps of: preparing respectively a lower non-magnetic layer coating material including at least the carbon black dispersed into the radiation curing binder resin and an upper magnetic layer coating material including at least the ferromagnetic powder and the abrasive dispersed into the binder resin; applying the lower non-magnetic layer coating material onto a non-magnetic support, drying the coating material and carrying out a smoothing

treatment of and irradiating with radiation to a resulting layer to form the lower non-magnetic layer; and, then, applying the upper magnetic layer coating material onto the lower non-magnetic layer, drying the coating material and carrying out the smoothing treatment of the resulting layer to form the upper magnetic layer.

It is respectfully submitted that the rejection is improper because claim 8 is a product by process claim. It is respectfully submitted that an article or composition forming the entire invention or any element in a combination invention may be defined in a claim in terms of the process for making it. Under Subsection I. PRODUCT-BY-PROCESS in MPEP 2173.05 (p) entitled Claim Directed to Product-by-Process or Product in Process, it states:

A product-by-process claim, which is a product claim that defines the claimed product in terms of the process by which is made, is proper. In re Luck, 476 F.2d 650, 177 USPQ 523 (CCPA 1973); In re Pilkington, 411 F.2d 1345, 162 USPQ 145 (CCPA 1969); In re Speppan, 394 F.2d 1013, 156 USPQ 143 (CCPA 1967).

Further, under MPEP 2113 entitled Product-by-Process Claims, it states that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on product itself.

As indicated above, claim 1 is directed to a product which is allowable over the applied art. It is respectfully submitted that claim 8 is directed to a process for making the product recited in claim 1. Thus, it is respectfully submitted that claim 8 is allowable over the applied art.

Withdrawal of the rejection is respectfully requested.

Claim 5 is rejected under 35 U.S.C. 103 (a) as unpatentable over Saitoh et al. as applied to claim 1 in view of Echigo et al. (U.S. Patent No. 5,342,668) or Sato et al. (U.S. Patent No. 4,571,362). The rejection is respectfully traversed.

As indicated above, claim 1 is allowable over Saitoh. It is respectfully submitted that Echigo or Sato fail to cure the deficiencies of Saitoh. Thus, claim 1 is allowable over the combination of the references. Claim 5 depends from claim 1 and includes all of the features of claim 1. It is respectfully submitted that claim 5 is allowable at least for the reason claim 1 is allowable as well as for the features it recites.

Withdrawal of the rejection is respectfully requested.

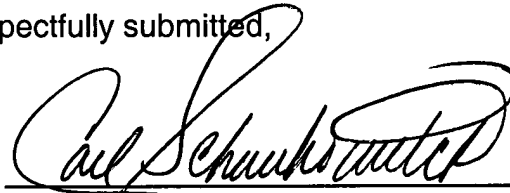
In view of the foregoing, reconsideration of the application and allowance of the pending claims are respectfully requested. Should the Examiner believe anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' representative at the telephone number listed below.

Should additional fees be necessary in connection with the filing of this paper or if a Petition for Extension of Time is required for timely acceptance of the same, the Commissioner is hereby authorized to charge Deposit Account No. 18-0013 for any such fees and Applicant(s) hereby petition for such extension of time.

Respectfully submitted,

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Enclosure(s):        Appendix I (Marked-up Version of Amended Claims)

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## **APPENDIX I**

### **(MARKED-UP VERSION OF AMENDED CLAIMS)**

1. (Amended) A magnetic recording medium comprising a lower non-magnetic layer containing at least a carbon black and a radiation curing ~~type~~-binder resin on a non-magnetic support and an upper magnetic layer having a thickness of 0.30  $\mu\text{m}$  or less on the lower non-magnetic layer, wherein the upper magnetic layer contains at least a ferromagnetic powder, a binder resin, and an abrasive having a Mohs hardness of 6 or higher and a smaller average particle size than the thickness of the upper magnetic layer.

5. (Amended) The magnetic recording medium according to claim 1, wherein the abrasive contains two or more ~~kinds of~~ abrasives which have different average particle sizes to each other.

8. (Twice Amended) A magnetic recording medium including a lower non-magnetic layer containing at least a carbon black and a radiation curing ~~type~~-binder resin on a non-magnetic support and an upper magnetic layer having a thickness of 0.30  $\mu\text{m}$  or less on the lower non-magnetic layer, the upper magnetic layer containing at least a ferromagnetic powder, a binder resin, and an abrasive having a Mohs hardness of 6 or higher and a smaller average particle size than a thickness of the upper magnetic layer, the magnetic recording medium produced by a process comprising the steps of:

preparing respectively a lower non-magnetic layer coating material including at least the carbon black dispersed into the radiation curing ~~type~~-binder resin, and an upper magnetic layer coating material including at least the ferromagnetic powder, and the abrasive ~~to be formed~~ ~~dispersed~~ into the binder resin,

applying the lower non-magnetic layer coating material onto a non-magnetic support, drying the coating material, and carrying out a smoothing treatment of and irradiating with radiation to a resulting layer to form the lower non-magnetic layer,

and then

applying the upper magnetic layer coating material onto the lower non-magnetic layer, drying the coating material, and carrying out the smoothing treatment of the resulting layer to form the upper magnetic layer.